46. A method for determining a patient-specific probability of malignancy in at least one of a thyroid nodule and a breast, said method including:

collecting clinical parameters from a plurality of patients to create a training database, the clinical parameters including at least four of fine needle aspiration biopsy results, ultrasound data, lymph node size, imaging data, Gail model cutoff, mammogram results, MRI results, breast size, and personal history of breast disease;

creating a fully unsupervised Bayesian Belief Network model using data from the training database;

validating the fully unsupervised Bayesian Belief Network model;

collecting the clinical parameters for an individual patient;

receiving the clinical parameters for the individual patient into the fully unsupervised Bayesian Belief Network model;

outputting the patient-specific probability of malignancy from the fully unsupervised Bayesian Belief Network model to a graphical user interface for use by a clinician; and

updating the fully unsupervised Bayesian Belief Network model using the clinical parameters for the individual patient and the patient-specific probability of malignancy.

47. The method according to claim **46**, wherein the imaging data includes results from electrical impedance scanning,

wherein the results from the electrical impedance scanning include a definitely benign score, probably benign score, suspicious for cancer score, probably cancer score, and definitely cancer score,

wherein the fine needle aspiration biopsy results include an inadequate score, indeterminate score, negative score, and positive score,

wherein the ultrasound data include a complex cyst score, mixed score, simple cyst score, and solid score, and

wherein the lymph node size includes a less than 18 centimeters score, 18-31 centimeters score, and greater than 31 centimeters score.

48. A method for determining a patient-specific probability of breast cancer, said method including:

collecting clinical parameters from a plurality of patients to create a training database, the clinical parameters including Gail model cutoff, mammogram results, MRI results, breast size, and personal history of breast disease;

creating a fully unsupervised Bayesian Belief Network model using data from the training database;

validating the fully unsupervised Bayesian Belief Network model;

collecting the clinical parameters for an individual patient;

receiving the clinical parameters for the individual patient into the fully unsupervised Bayesian Belief Network model;

outputting the patient-specific probability of malignancy from the fully unsupervised Bayesian Belief Network model to a graphical user interface for use by a clinician; and

updating the fully unsupervised Bayesian Belief Network model using the clinical parameters for the individual patient and the patient-specific probability of malignancy.

49. The method according to claim **48**, wherein the Gail model cutoff includes one of a positive score and a negative score.

50. The method according to claim **48**, wherein the clinical parameters further include results from electrical impedance scanning.

51. The method according to claim **48**, wherein the clinical parameters further include ultrasound data and results of a clinical breast examination.

52. The method according to claim **48**, wherein said creating of the fully unsupervised Bayesian Belief Network model includes creating the fully unsupervised Bayesian Belief Network model without human-developed decision support rules.

53. The method according to claims **1-7** and **16-52**, further including updating the fully unsupervised Bayesian Belief Network model using a data pool, the data pool including clinical parameters from a plurality of patients.

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